

Workshop 1 Agenda

Virtual Workshop on Advances in Wood Heater Research and Development

January 11th and 12th, 2022

As part of the 5th Wood Heater Design Challenge

Day 1

January 11th, 2022 10:00 – 13:00 New York Time (Eastern Standard Time)

TIME	TOPIC
10:00 – 10:05	Welcome and goals for the wood heater design challenge and the workshop Dr. Mark Shmorhun, DOE, USA
10:05 – 10:10	Organization of the workshop Dr. Vi Rapp, LBNL, USA
10:10 – 10:30	“Basics of Biomass Combustion & Moving Forward to Achieve the Best Performance” Rebecca Trojanowski, BNL, USA
10:30 – 10:50	“Wood Combustion Agenda 2030 - Development Pathways for a Low Emission Future” Dr. Ingo Hartmann, DBFZ, Germany
10:50 – 11:00	BREAK
11:00 – 12:00	Breakout Panels Session A: Fuel of the future—keeping biomass relevant in the push for electrification Session B: Advanced control strategies Session C: Advanced combustion strategies
12:00 – 12:15	BREAK
12:15 – 12:30	Closing remarks (summary of breakout panels)
12:30 – 1:00	Optional networking

Day 2

January 12th, 2022 10:00 – 13:00 New York Time (Eastern Standard Time)

TIME	TALK
10:00 – 10:10	Highlights from day 1 of workshop
10:10 – 10:40	“Poor operation of log wood stoves: Emission impact and potential avoidance by automatic air control” Dr. Hans Hartmann, TFZ, Germany
10:40 – 10:50	BREAK
10:50 – 12:00	Breakout Panels Session D: Improving biomass combustion through modeling Session E: Post combustion control strategies Session F: Advanced hydronic heater design concepts
12:00 – 12:15	BREAK
12:15 – 12:30	Closing remarks (summary of breakout panels)
12:30 – 1:00	Optional networking



Breakout Sessions:

DAY 1:

Session A	Fuel of the future—keeping biomass relevant in the push for electrification
<i>Session Leaders:</i> Mark Knaebe & Gillian Mittelstaedt	With the push for electrification will there be a shift away from wood fuels? Perhaps the future is beyond and includes other fuels such as biochar as byproduct from other biofuel industries to reduce emissions? Can we pre-treat wood to decrease emissions? What does this mean in terms of design and flexibility of systems?
Session B	Advanced control strategies
<i>Session Leaders:</i> Jeff Hallowell & Jessica Tryner	Through the use of automation and various control strategies, we can improve combustion to minimize the emissions but also mitigate operator errors and provide a friendly user interface to educate users—what has worked best so far and what more can we do?
Session C	Advanced combustion strategies
<i>Session Leaders:</i> Ingo Hartmann & Elliott Levine	Gasification and the use of combustion staging have shown improvements in emissions and efficiency, what is the state of the art? Can we make further improvements with novel airflow designs? What works and doesn't?

DAY 2:

Session D	Improving biomass combustion through modeling
<i>Session Leaders:</i> Dimitris Assanis & Paul DesJardin	Preliminary modeling, including CFD, can help manufacturers explore new techniques and features to reduce emissions that could have a significant impact on air quality, but are commonly available modeling techniques are too rudimentary to provide sufficient resolution for design optimization?
Session E	Post combustion control strategies
<i>Session Leaders:</i> Nordica MacCarty & Mirjam Mueller	Post control strategies such as catalysts and electrostatic precipitators (ESPs) can help mitigate emissions and recent trends in small scale ESPs and novel catalyst designs can help achieve lower emissions. What is the current state of the art, and how can we continue to advance this area?
Session F	Advanced hydronic heater design concepts
<i>Session Leaders:</i> Marc Caluwe & Scott Nichols	Thermal storage and modulation have shown to have a positive effect in terms of emissions and efficiency performance, but their added cost continues to be a barrier. can we move past that? What are the biggest advancements hydronic heaters have seen and how can we continue to do better?